Treatment of Mixed Chlorinated Solvents and 1,4-Dioxane Groundwater *Testing of Two Biodegradation Strategies*

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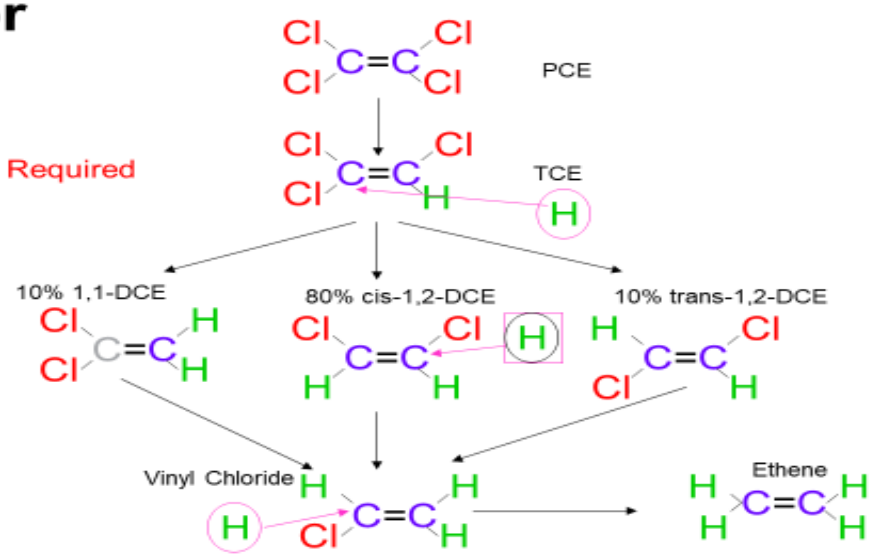
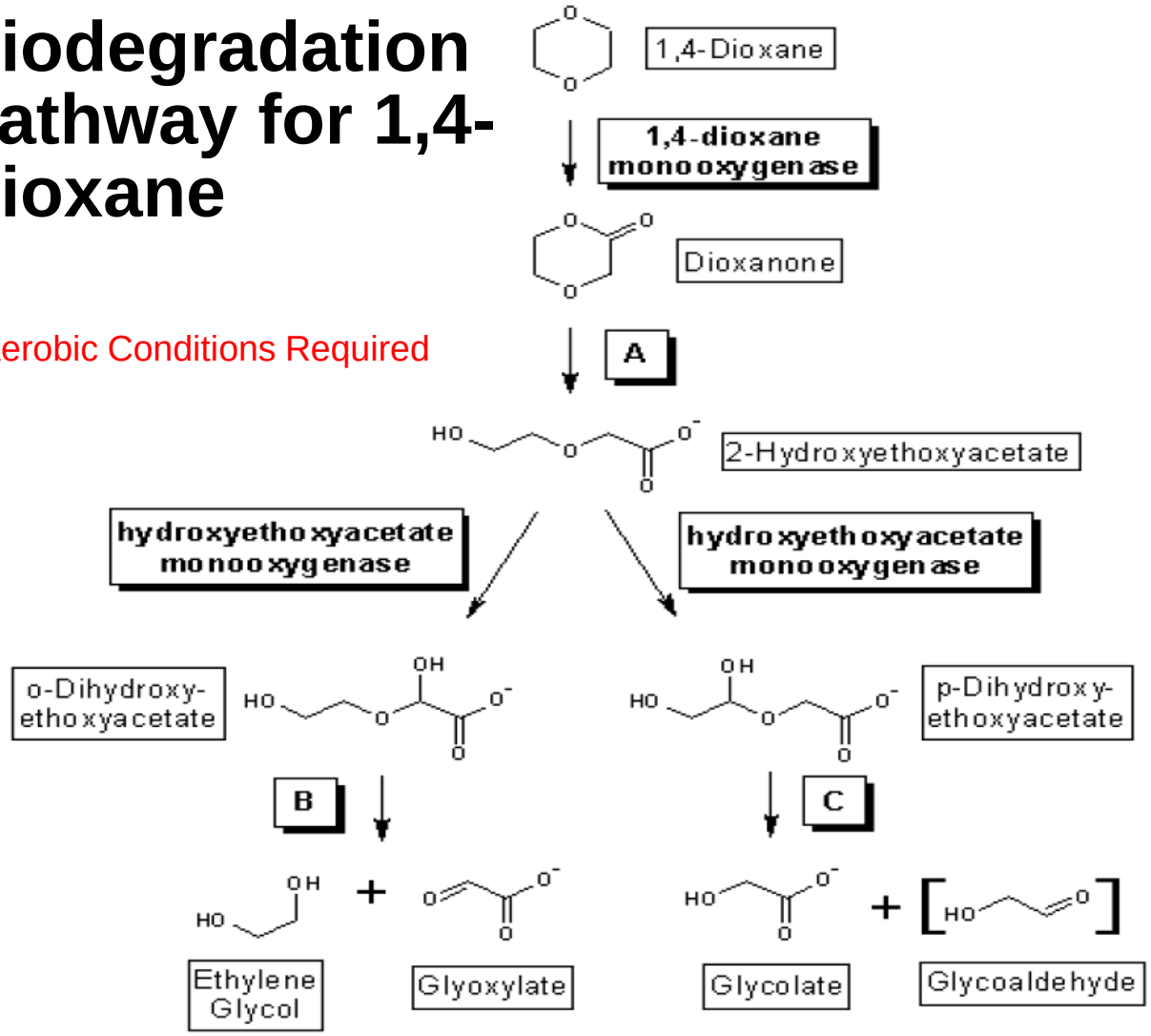
Biodegradation Pathway for CVOC

*Anaerobic Conditions Required

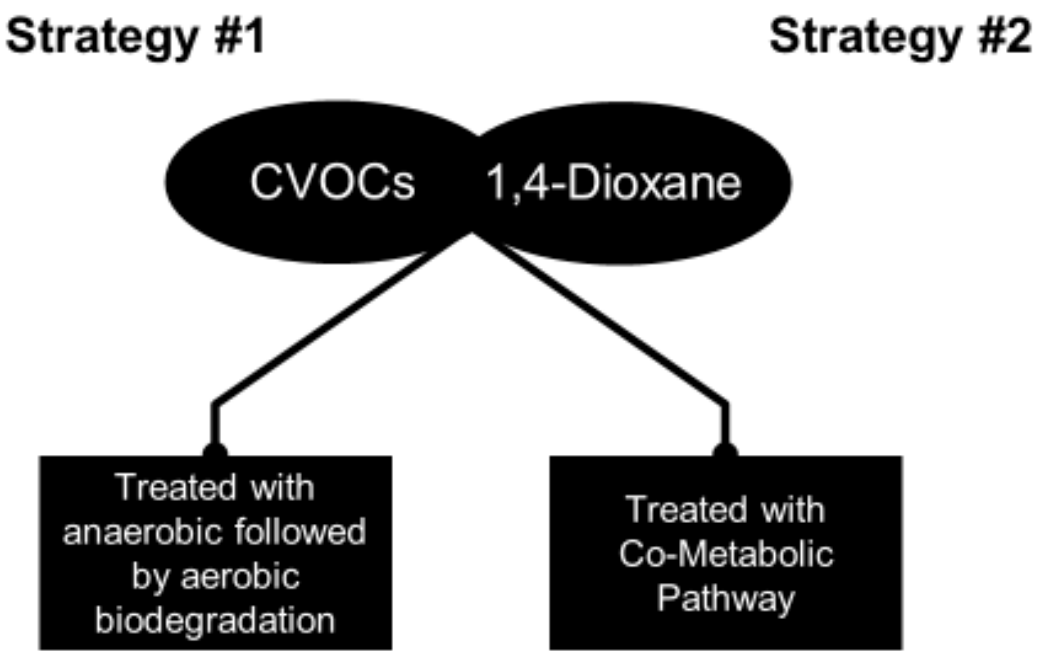


Biodegradation Pathway for 1,4-Dioxane

*Aerobic Conditions Required



Strategies to Treat a Plume Containing CVOCs and 1,4-Dioxane

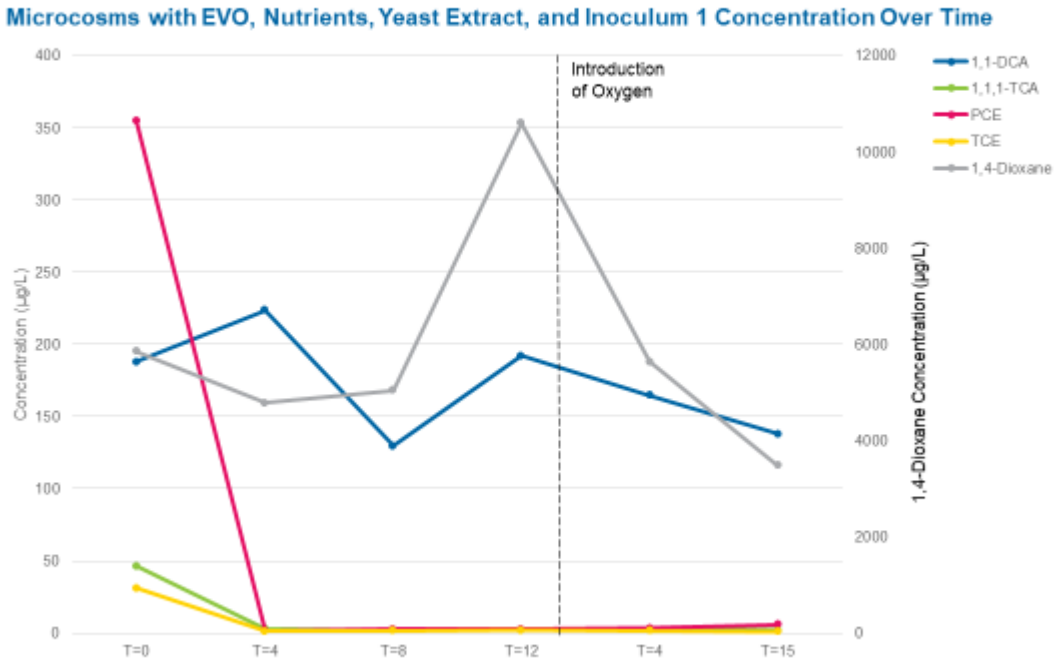


Treatability Study Approach

- Assess the potential of enhanced biodegradation for treatment of CVOC by anaerobic biodegradation
- Assess the potential of enhanced biodegradation for treatment of 1,4-dioxane by aerobic biodegradation
- Assess the potential of enhanced biodegradation for treatment of CVOC and 1,4-dioxane by co-metabolic biodegradation under aerobic conditions

Results/Lessons Learned

Strategy #1 Results



- Up to 41 percent treatment of 1,4-dioxane was observed under sequential anaerobic/aerobic conditions.
- Since greater treatment of both 1,4-dioxane and CVOC were observed with the sequential anaerobic-aerobic treatment, this treatment was recommended for a field study

- The results of this study showed that CVOC can be removed under aerobic and anaerobic conditions; greater treatment was observed under anaerobic conditions.
- Up to 26 percent treatment of 1,4-dioxane was observed under aerobic co-metabolic conditions.

Strategy #2 Results